H Canyon

H Canyon is the only hardened nuclear chemical separations plant still operational in the United States. The facility's operations historically recovered uranium-235 (U-235) and neptunium-237 (Np-237) from aluminum-based enriched-uranium fuel tubes from site nuclear reactors and other domestic and foreign research reactors using a chemical separations process.

In addition, H Canyon was equipped with capabilities to recover Np-237 and plutonium-238 (Pu-238) from special irradiated targets. Pu-238 was produced by irradiating recovered Np-237 in SRS nuclear reactors, and is used in power systems for the NASA deep space exploration programs, such as the Cassini spacecraft, which is currently exploring the planet Saturn.

H Canyon was constructed in the early 1950s and began operations in 1955. The building is called a canyon because of its long rectangular shape. It is 835 feet long with several levels to accommodate the various stages of material stabilization, including control rooms to monitor overall equipment and operating processes, equipment and piping gallery for solution transport, storage, and disposition, and unique overhead bridge cranes to support overall process operations. All work is remotely controlled, and employees are further protected from radiation by thick concrete walls.

Nuclear material (fuel tubes, oxides, etc.) is transferred from designated storage areas from across SRS to H Canyon, converted to solution and transferred through various process stages where uranium, neptunium and plutonium are separated. Contaminants are removed, and the product is purified. Waste is transferred to the site's high-level waste storage tanks for eventual vitrification in the Defense Waste Processing Facility at SRS.

In 1992, the Department of Energy (DOE) concluded that recovery of enriched uranium for reuse in weapons programs was no longer justified because of the reduction in the nation's nuclear weapons stockpile. However, there was an inventory of highly enriched uranium fuels and solutions in various stages of the SRS process.

Between December 1995 and October 1997, DOE issued a series of decisions to resume chemical separation operations to stabilize and manage most of the remaining inventory of highly enriched uranium (HEU) materials at SRS. DOE also concluded that H Canyon was also to be used to support stabilization of Np-237 stored in H Canyon and a number of plutonium solids currently stored in F Area vaults.

At the direction of DOE, in October 1997 H Canyon began recovery of U-235. The resulting solution, also called "highly enriched uranium," or HEU, is being blended with natural uranium (NU) to form low-enriched uranium (LEU), which is further processed off-site to produce fuel for commercial power reactors. In July 2003, the first LEU shipment was sent to the Tennessee Valley Authority (TVA). TVA converts the LEU to fuel for their power reactors to generate electricity. Material from SRS is currently generating electricity at the Browns Ferry Nuclear Station.

H Canyon received and unloaded the first Black Box in August 2005. TRU waste inside the Black Box is package in plywood boxes, which is removed in the warm canyon truck well and repackaged into standard large box shipping containers that are certified to be transported to the Waste Isolation Pilot Plant (WIPP) in Nevada. This work allows waste to leave South Carolina for final disposition.

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